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Stormwater Management Policy

Purpose

The goal of the Stormwater Management Policy is to improve water quality and address water quantity problems by the implementation of performance standards for stormwater management. Urban runoff and discharges from stormwater outfalls are the single largest source responsible for water quality problems in the Commonwealth's rivers, lakes, ponds, and marine waters. The Stormwater Management Standards establish clear and consistent guidelines for stormwater management in Massachusetts. The Standards are designed for use under multiple statutory and regulatory authorities of the Department of Environmental Protection, including the Wetlands Protection Act, as amended by the Rivers Protection Act, and the Clean Water Act.

Stormwater discharges occur as rainfall and snow melt carries pollutants to surface and groundwater. New and existing development increases impervious surfaces, which alters natural drainage features, increases peak discharge rates and volumes, and reduces recharge to maintain wetlands and baseflows in streams. Development also results in corresponding increases in the concentration and types of pollutant loadings, including nutrients, solids, metals, salt, pathogens, pesticides, and hydrocarbons. Best Management Practices (BMPs) reduce or prevent pollutants from reaching water bodies and control the quantity of runoff from a site. The Stormwater Management Standards address both water quality (pollutants) and water quantity (flood control) problems by establishing the level of required controls through the use of BMPs.

The Stormwater Management Standards are intended to be applied during routine project review by issuing authorities under the Wetlands Protection Act. Use of the standards should prevent or minimize adverse environmental impacts due to unmanaged stormwater while limiting undue costs and recognizing site constraints. Applicants should submit the stormwater form developed by DEP which presents in a simple and concise format how the Stormwater Management Standards have been met. The form will allow Commissions and the Department easy access to the stormwater management components of the project, and should simplify the review process for the applicant.

Regulatory Authority

The basic approach to implement the Stormwater Management standards is to rely on review by conservation commissions or the Department under the Wetlands Protection Act for new development and on the Department's authority under the state Clean Waters Act for

remediation of existing discharges. The Standards support existing legal authority, serving as the Department's interpretation of its existing regulations.¹

For new development and redevelopment, conservation commissions or the Department should regulate stormwater through an Order of conditions whenever jurisdiction is established under the Wetlands Protection Act. Unmanaged and untreated stormwater will alter resource areas and require conditions to meet certain performance standards and to protect the interests of the Act. The Guidance for Implementation of the Rivers Protection Act requires projects to manage stormwater according to these Standards.²

The regulations contain explicit jurisdiction over point source discharges, including stormwater. In the absence of a NPDES permit entitled to a presumption,³ local conservation commissions or the Department should comply with 310 CMR 10.05(6) which instructs issuing authorities to impose conditions on the quality and quantity of discharges from either closed or open channel point sources to protect the interests of the Act provided the point source is within a resource area or the buffer zone. Even if the source of the stormwater discharges originates outside jurisdictional areas, issuing authorities should ensure that the Standards are met at the point of discharge, provided the discharge is within geographic jurisdiction.⁴ In addition, by placing limitations on the quantity of the discharge for any point sources, commissions and the Department can ensure that the stormwater generated from future development cannot simply be routed through existing drainage outfall pipes.

To address existing discharges, the Department will use watershed assessments and remedial action under its Clean Water Act authority. Existing discharges include municipal storm sewer systems and drainage structures from developed areas with point sources to wetlands or water bodies.

¹ Applicable Regulations and Requirements

Administered by conservation commissions and the Department

310 CMR 10.00 (Wetlands Protection Act)

Rivers Protection Act Amendments to the Wetlands Protection Act

Administered by the Department of Environmental Protection

314 CMR 9.00 (401 Water Quality Certification)

314 CMR 3.00 (Surface Water Discharge Permit Program)

314 CMR 4.00 (Surface Water Quality Standards)

314 CMR 5.00 (Groundwater Discharge Permit Program)

314 CMR 6.00 (Ground Water Quality Standards)

401 Certification Conditions of the EPA General Permits

² The performance standards also apply under the setback and BMP requirements for stormwater management in DEP's 401 Water Quality Certification program (314 CMR 9.06) and the state certification requirements for EPA's General and Multi-Sector Permits for Stormwater Discharges.

³ Under 310 CMR 10.03, the effluent limits of a NPDES permit are presumed to protect the interests of the Act; this refers to individual rather than general permits. EPA has issued very few individual NPDES permits for stormwater discharges.

⁴ For example, a developer proposes an overflow pipe within the buffer zone from a detention basin that is outside the riverfront area. The issuing authority can insist that the standards are met at the overflow pipe but cannot prescribe the BMP, such as the detention basin, used to achieve the standards. In order to evaluate whether the standards can be met, the issuing authority may require information about structures and practices beyond the riverfront area provided it is directly related to the discharge.

Massachusetts has regulations under the state Clean Water Act specifying when a state surface water discharge permit for stormwater is required. Discharges that meet the Stormwater Management Standards do not need permits. Discharges that do not meet the Standards may be identified during water quality sampling conducted in each basin as part of the watershed assessment and planning process. The Department will promote voluntary compliance whenever possible. In some cases, DEP may designate a discharge as a significant contributor of pollutant which requires a permit or use enforcement mechanism to achieve remediation of stormwater-impaired waterways.

Applicability

The Stormwater Management Standards apply to industrial, commercial, institutional, residential subdivision, and roadway projects, including site preparation, construction, redevelopment, and on-going operation.

The Stormwater Management Standards do not apply to:⁵

- (1) Single-family house projects;
- (2) Residential subdivisions with four or fewer lots, provided any discharge will not affect a critical area; or
- (3) Emergency repairs to roads or their drainage systems.

The Stormwater Management Standards apply to the extent practicable to:

- (1) Residential subdivisions with four or fewer lots with a discharge potentially affecting a critical area; and
- (2) Five to nine residential lots, provided any discharge will not affect a critical area.

BMPs for compliance “to the extent practicable” must, at a minimum, include: extended detention pond, water quality swale, dry well (rooftop runoff only), sand and organic filter, and/or pretreatment devices. Project proponents must demonstrate that they are implementing the highest practicable level of stormwater treatment. Critical areas are Outstanding Resource Waters (ORWs), shellfish bed, swimming beaches, cold water fisheries, and recharge areas for public water supplies.

The Stormwater Management Standards apply to five to nine residential subdivisions with discharges potentially affecting critical areas and any subdivision of 10 or more lots, as well as other activities. Residential development that is part of a phased development project does not qualify for the exemption. These thresholds do not preclude these activities from meeting applicable state regulatory requirements not directly related to the stormwater discharge.

⁵ The projects of any size, direct discharges of untreated stormwater from pipes to wetlands or waters are not allowed. Erosion and sedimentation control during construction must be provided.

Stormwater Management Standards

The Department will presume that projects meeting the Stormwater Management Standards satisfy regulatory requirements. When one or more of the Standards cannot be met, an applicant may demonstrate that an equivalent level of environmental protection will be provided.

1. No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.
2. Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.
3. Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post-development site should approximate the annual recharge from the pre-development or existing site conditions, based on soil types.⁶
4. For new development, stormwater management systems must be designed to remove 80% of the average annual load (post-development conditions) of Total Suspended Solids (TSS). It is presumed that this standard is met when:
 - (a) Suitable nonstructural practices for source control and pollution prevention are implemented;
 - (b) Stormwater management best practices (BMPs) are sized to capture the prescribed runoff volume; and
 - (c) Stormwater management BMPs are maintained as designed.
5. Stormwater discharges from areas with higher potential pollutant loads require the use of specific stormwater management BMPs (see chart on page 1-8). The use of infiltration practices without pretreatment is prohibited.
6. Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas (see list of page 1-8). Critical areas are Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold water fisheries and recharge areas for public water supplies.
7. Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. However, if it is not practicable to meet all the Standards, new (retrofitted or expanded) stormwater management systems must be designed to improve existing conditions.
8. Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.
9. All stormwater management systems must have an operations and maintenance plan to ensure that systems function as designed.

⁶ “To the extent practicable” means the applicant has made all reasonable efforts to meet the standards, including evaluation of alternative BMP designs and their locations.

Explanation of Standards

Untreated Stormwater (Standard 1)

Treated stormwater is defined to be stormwater that meets the requirements in Standards 2 through 9. Rooftop runoff, except from metal roofs (which have higher potential pollutant loads), generally should be considered uncontaminated for the purposes of these Standards and therefore can be infiltrated directly without treatment.

Post-Development Peak Discharge Rates (Standard 2)

To meet Standard 2, controls must be developed for the 2-year and 10-year 24-hour storm events. The 100-year 24-hour storm event must be evaluated to demonstrate that there will not be increased flooding impacts offsite.

Measurement of peak discharge rates must be calculated using the point of discharge or downgradient property boundary. The topography of the site may require evaluation at more than one location if flow leaves the property in more than one direction. An applicant may demonstrate that a feature beyond the property boundary (e.g. culvert) is more appropriate as a design point.

Discharges to waters subject to tidal action do not need to maintain pre-development peak discharge rates. All other Standards must be met.

Recharge to Groundwater (Standard 3)

The prescribed stormwater runoff volume to be recharged to groundwater should be determined using the existing (pre-development) soil conditions (from a U.S. Natural Resources Conservation Service (NRCS, formerly SCS) County Soils Survey, onsite soil evaluation, or other geologic information) and these rates:

<u>Hydrologic Group</u>	<u>Volume to Recharge (x Total Impervious Area)</u>
A	0.40 inches of runoff
B	0.25 inches of runoff
C	0.10 inches of runoff
D	waived

Different recharge values may be used, provided the proponent makes a clear showing demonstrating that the recharge rate differs from the listed values based upon soils, precipitation, and evapotranspiration.

Water Quality (Standards 4-6)

The runoff volume to be treated for water quality is based on the following:

- (1) For discharges to critical areas, the volume to be treated is calculated as 1.0 inch of runoff times the total impervious area of the post-development project site.
- (2) For all other discharges, volume to be treated is calculated as 0.5 inches of runoff times the total impervious area of the post-development project site.

Using the impervious area as the basis for calculating stormwater runoff promotes the use of straightforward volume calculations. The total impervious area of a site is determined based on final project site plans, not on pre-existing conditions. Roof runoff (except for certain metal roofs) may be infiltrated, and any infiltrated, and any infiltrated volume may be subtracted from the total runoff volume.

Removal of 80% TSS (Standard 4)

BMPs must be selected so that a total of 80% TSS removal is provided by one or more BMPs as shown on the following chart. Use the column showing design rates for the projected removal rate, unless there is a demonstration that a higher or lower figure within the column showing the range of average TSS should be used. BMPs not listed below should be evaluated based on data on removal efficiencies provided by the applicant. The 80% TSS removal requirement⁷ applies to post-development conditions after the site is stabilized. Monitoring should not be required.⁸

⁷Total suspended solids was selected as the target pollutant constituent for a removal standard because of its widespread contribution to water quality and aquatic habitat degradation, because many other pollutant constituents including heavy metals, bacteria, and organic chemicals sorb to sediment particles, and because available data sets for BMP removal efficiency reveal that TSS has been the most frequently and consistently sampled constituent.

⁸Issuing authorities may impose sampling or monitoring requirements when developers propose alternative stormwater management techniques or in unusual circumstances where deemed necessary to protect sensitive ecological receptors or public health.

TSS Removal Rates (adapted from Schueler, 1996, & EPA, 1993)

BMP List	Design Rate	Range of Average TSS Removal Rates	Brief Design Requirements
Extended Detention Pond	70%	60-80%	Sediment forebay
Wet Pond (a)	70%	60-80%	Sediment forebay
Constructed Wetland (b)	80%	65-80%	Designed to infiltrate or retain
Water Quality Swale	70%	60-80%	Designed to infiltrate or retain
Infiltration Trench	80%	75-80%	Pretreatment critical
Infiltration Basin	80%	75-80% (predicted)	Pretreatment critical
Dry Well	80%	80% (predicted)	Rooftop runoff (uncontaminated only)
Sand Filter (c)	80%	80%	Pretreatment
Organic Filter (d)	80%	80%+	Pretreatment
Water Quality Inlet	25%	15-35% w/ cleanout	Off-line only; 0.1" minimum Water Quality Volume (WQV) storage
Sediment Trap (Forebay)	25%	25% w/ cleanout	Storm flows for 2-year event must not cause erosion; 0.1" minimum WQV storage
Drainage Channel	25%	25%	Check dams; non-erosive for 2-yr.
Deep Sump and Hooded Catch Basin	25%	25% w/ cleanout	Deep sump general rule = 4 x pipe diameter or 4.0' for pipes 18" or less
Street Sweeping	10%	10%	Discretionary non-structural credit, must be part of approved plan

Notes:

- (a) Includes wet extended detention ponds, wet ponds, multiple pond designs.
- (b) Includes shallow marsh, extended detention wetlands, pocket wetland, and pond/wetland designs
- (c) Includes surface, underground, pocket, and perimeter designs.
- (d) Includes compost, peat/sand, and bio/filtration designs.

Land Uses with Higher Potential Pollutant Loads (Standard 3)

Residential, office, and institutional development and roads normally will not yield high potential pollutant loads. However, certain land uses generate higher concentrations of

pollutants than found in typical runoff, based on existing data. Source reduction is recommended. These areas are subject to the requirement of Standard 5:

- (1) Stormwater discharges associated with Standard Industrial Classifications [NPDES stormwater permit program requirements apply]
- (2) Auto salvage yards (auto recycler facilities)
- (3) Auto fueling facilities (gas stations)
- (4) Fleet storage areas (cars, buses, trucks, public works)
- (5) Vehicle service, maintenance and equipment cleaning areas
- (6) Commercial parking lots with high intensity use. Such areas typically include fast food restaurants, convenience stores, high-turnover [chain] restaurants, shopping centers and supermarkets.
- (7) Road salt storage and loading areas (if exposed to rainfall)
- (8) Commercial nurseries
- (9) Flat metal (galvanized metal or copper) rooftops of industrial facilities
- (10) Outdoor storage and loading/unloading areas of hazardous substances
- (11) Sara 312 generators (if materials or containers are exposed to rainfall)
- (12) Marinas (service, repainting, and hull maintenance areas)

Required within areas of higher potential pollutant loads if also a critical area:

- (1) Infiltration trenches;
- (2) Infiltration basins; or
- (3) Dry wells

Restrictions apply to certain BMPs:

Sand or organic filters, detention basins, wet ponds, or constructed wetlands may only be used if sealed or lined.

Critical Areas (Standard 6)

BMPs approved for use near critical areas, designed to treat 1.0 inch of runoff times the total impervious surface of the post-development project site are generally limited to:

- Extended detention basins
- Wet ponds
- Constructed wetlands
- Water quality swales
- Sand filters
- Organic filters
- Infiltration basins
- Infiltration trenches
- Deep sump and hooded catch basins (used with other BMPs)

Stormwater management systems near public water supplies and other critical resources should incorporate designs which allow for shut-down and containment in the vent of an emergency spill or other unexpected contamination event.

For the purpose of this standard, “near” means those locations where there is a strong likelihood of a significant impact occurring to a critical area, taking into account site specific factors.

Redevelopment (Standard No. 7)

“Redevelopment” projects are defined as follows:

- (1) Maintenance and improvement of existing roadways, including widening less than a single lane, adding shoulders, and correcting substandard intersections and drainage, and repaving; and
- (2) Development, rehabilitation, expansion, and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area.

Components of redevelopment projects which include development of previously undeveloped sites do not fall under Standard 7.

Erosion and Sediment Controls (Standard 8)

Examples of BMPs for erosion and sediment control are staked hay bales, filter fences, hydroseeding, and phased development. Many stormwater BMP technologies (e.g. infiltration technologies) are not designed to handle the high concentrations of sediments typically found in construction runoff and must be protected from construction-related sediment loadings. Construction BMPs must be maintained.

Operation and Maintenance Plans (Standard 9)

An operation and maintenance plan (O&M Plan) should, at a minimum, identify:

- (1) Stormwater management system(s) owner(s);
- (2) The party or parties responsible for operation and maintenance;
- (3) A schedule for inspection and maintenance; and
- (4) The routine and non-routine maintenance tasks to be undertaken.

The owner of the BMP is generally considered to be the landowner of the property on which the BMP is located, unless other legally binding agreements are established with another entity. The Order of Conditions and Certificate of Compliance should be written to allow for routine maintenance during construction and post-development phases of the project as defined in the O&M Plan. A continuing condition in the Certificate of Compliance will ensure that maintenance can be performed without triggering further filings under the Wetlands Protection Act.

Wetlands Protection Program Policy

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